A review of the genus *Medaura* Stål, 1875 (Phasmatidae: Phasmatinae), including the description of a new species from Bangladesh

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Abstract

The genus *Medaura* Stål, 1875 is reviewed. Keys are provided to distinguish adults and eggs of the two species, which includes *M. jobrensis* - a new species from the Chittagong region, Bangladesh. It is pointed out that both species vary considerably in the degree of lobes and tubercles present, hence *Medaura nimia* Brunner, 1907 and *Medaura subintegra* Carl, 1913 are listed as new synonyms of *Medaura scabriuscula* (Wood-Mason, 1873) from India and Bangladesh. *Medaura brunneri* Stål, 1875 is confirmed as a synonym of *M. scabriuscula*, whose male is described for the first time. Figures of adults and eggs are provided.

Key words

Phasmida, *Medaura* review, *key to genus, Medaura jobrensis* n.sp.

Introduction

Cliquennois (1999) published an account of collecting phasmids in Bangladesh, which included provisional identification of species collected. Following detailed research on the genus *Medaura* Stål, 1875, including rearing a series of specimens from the Chittagong and Sylhet regions of Bangladesh, and examination of type material in various museum collections, it is now possible to resolve errors in the literature. These have resulted from the belief of some authors that variation in tubercles and lobes, even in species from close geographical proximity, is sufficient to rank specimens as distinct species.

This paper describes and illustrates eggs and adults of a new species and the other valid *Medaura* species.

Methods

Research has been undertaken as follows, i) examining the literature on phasmids; ii) checking type and other material, where possible; and iii) breeding a series of *Medaura* species from insects collected from Sharighat, Sylhet region, and the University of Chittagong grounds, Jobra, in the Chittagong region of Bangladesh. The Chittagong region has received little attention from insect collectors in the past, whereas historic collections from "Silhet", then in India, were frequent. For instance, Brunner's collection (Naturhistorisches Museum Wien) includes several species collected in Silhet by Deyrolle, a well known insect dealer in Paris; the region is now known as Sylhet.

The first stage of a detailed evaluation of the literature uncovered a confusing situation similar to those often encountered in phasmid taxonomy. One must research and decide whether Brunner and Redtenbacher (authors of the monograph on the order, published in three parts between 1906-08) correctly assessed the status of species, or whether there is a contradiction with publications such as Kirby's Catalogue of species, published in 1904, but not referred to by Brunner and Redtenbacher. In this case Brunner (1907) regarded *Medaura brunneri* Stål, 1875 as a valid species, although Wood-Mason (1877) had already synonymised it with his *Bacillus scabriusculus*, described in 1873 (at the same time erecting a new genus *Menaka*); a treatment accepted by Kirby (1904), except that he considered the genus *Medaura* as still valid.

Breeding a series of specimens is invaluable to review any variation. This proved our theory that *Medaura* species are remarkably variable, assisting our decision on which taxa are valid.

The following abbreviations have been used for museum collections:

BMNH	Natural History Museum, London, U.K.
MHNG	Muséum d'Histoire Naturelle, Geneva, Switzerland.
NHMW	Naturhistorisches Museum Wien, Vienna, Austria.
NZSI	National Zoological Collection, Zoological Survey of India, Calcutta, India.
OXUM	Oxford University Museum, Oxford, UK.

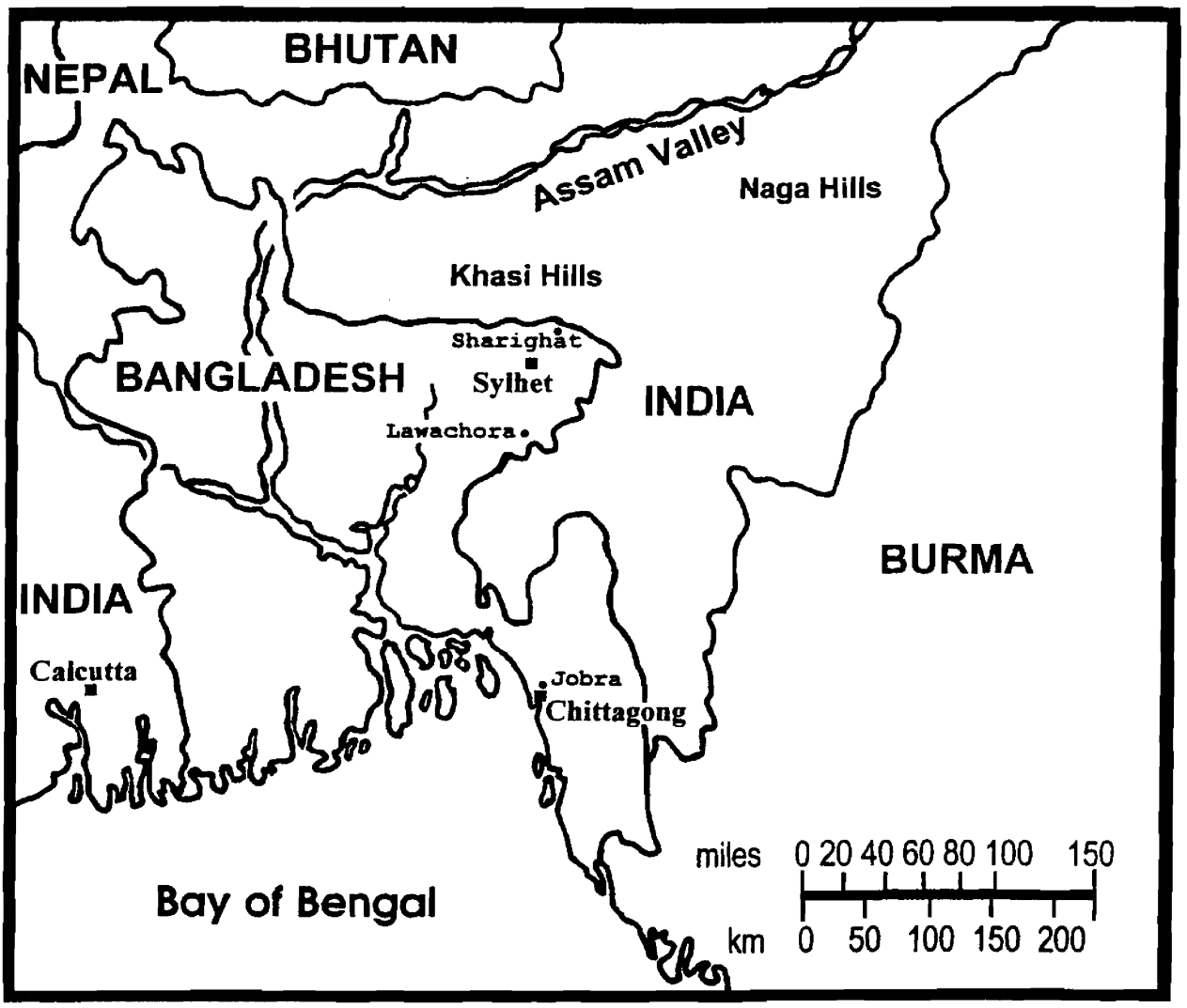


Figure 1. Map showing main localities in Bangladesh and neighbouring parts of India.

Medaura Stål, 1875

Medaura Stål, 1875: 69, as a subgenus of *Stheneboea* Stål, 1875. Type species: *Stheneboea (Medaura) brunneri* Stål, 1875: 69, designated by Kirby (1904: 341) under the senior name *Bacillus scabriusculus* Wood-Mason, 1873: 55, pl. 7: 1.

Medaura Stål; Brunner, 1893: 94 [elevated from subgenus to genus].

Menaka Wood-Mason, 1877: 342. Synonymised by Kirby, 1904: 341.

Stål listed two species in his new subgenus *Medaura*: *Stheneboea (Medaura) brunneri* and *S. (M) praon* (Westwood, 1859) without specifying the type species for the genus; the latter was

returned to *Lonchodes* Gray, 1835 by Brunner (1907). Stål's brief description of *Medaura*, in Latin, is as follows: "Tibiis anticis sulco percurrente instructis, superne haud foliaceo-dilatatis; capite inter oculos bispinoso; tarsis longioribus quam in divisione praecedente, articulo primo quinto longiore; femoribus posterioribus in linea media subcarinatis et interdum prope apicem denticulatis; tibiis, plerumque quoque femoribus, intermediis prope basin lobo foliaceo magno destitutis; operculo feminae posterius haud vel minus declivi, vel ibidem depresso; mas gracilior, pedibus lobis destitutis".

Whilst Stål has remarked on features such as the double-spined head, lobes and spines on the mid-legs and relatively minor variations compared with *Stheneboea*, the two genera are easy to distinguish from the antennae length, which are always shorter than the fore femora in *Medaura* (which belongs to the Phasmatidae, subfamily Phasmatinae), but much longer in *Stheneboea*, since shown to be a synonym of *Prisomera* Gray, 1835 (Heteronemiidae: Lonchodinae). However, they otherwise look similar in general appearance, so caution must be exercised if examining specimens with broken antennae. Normally though it is possible to distinguish them by lobes on the mid femora: *Prisomera* species have the largest lobes basally, unlike *Medaura* species, which have a small basal lobe.

The more robust appearance of these insects distinguishes them from their closest allies *Medauroidea* Zompro, 1999 (represented by a single species: *M. extradentata* (Brunner, 1907), previously belonging to the genus *Baculum* Saussure, 1861). It is understood that *Baculum* is being examined elsewhere (Zompro, pers. com.), but there are doubts concerning variation between the type species and taxa subsequently described (Brock, 1995). This genus needs to be split into various genera, based on an examination of morphology and egg differences. There are also numerous new synonyms to record, mainly as a result of authors describing species based on one sex. *Medauroidea extradentata* is another species variable in colour form and morphology. This species is widely reared, particularly in Europe. However, *M. extradentata* are slenderer than *Medaura* species and the eggs more oval-shaped and considerably more ornate, with the micropylar plate almost circular (the eggs significantly differ from known eggs of other species currently recognised as belonging to *Baculum*, confirming Zompro's action in transferring *extradentata* to a new genus).

Brunner (1907) listed three *Medaura* species: *M. brunneri* Stål, his new species *M. nimia* and *M. austeni* (Wood-Mason, 1875) the latter listed with uncertainty. *M. austeni* is not a *Medaura* species, nor a *Promachus* Stål, 1875 species, as indicated by Kirby, 1904. It is only known from a male (type locality - Dikrang valley, Assam, India) which has long antennae, in addition to a series of abdominal and some thoracic spines. This species is closely related to *Prisomera aspera* (Brunner, 1907), known from a single female from Sikkim, India. Various other species have also historically been associated in error with *Medaura*: *Medaura stali* Brunner, 1893 from Pegu in Burma (now known as Myanmar) was transferred by Brunner (1907) to the genus *Pachymorpha* Gray, 1835 (and later associated with *Hemipachymorpha* Kirby, 1904). Kirby (1904) doubtfully associated two species with *Medaura*: *M. darnis* (Westwood) from Sarawak (transferred to *Pachymorpha* Gray by Brunner, 1907) and *M. makassarinus* (Westwood, 1859) from Macassar, which is related to *darnis*.

The difficulties with Brunner and Redtenbacher (1906-08) have already been briefly discussed in 'Methods'. Unfortunately, it has not been possible to examine the holotype of *Bacillus scabriusculus* Wood-Mason, but the figure provided agrees with Brunner's drawing (pl. 11.2) of *M. brunneri*, taking into account variation of features such as the extent of leg lobation within this species. It is likely that when describing *M. brunneri* from Silhet in 1875, Stål was unaware of Wood-Mason's 1873 paper. In 1877 Wood-Mason examined material from Silhet (possibly from the same source as Stål) and decided that his material

agreed with Stål's description. *M. brunneri* is therefore confirmed as a synonym of *M. scabriuscula*.

The Naga Hills in India (type locality of *M. scabriuscula*) are relatively close to the border of Bangladesh (see figure 1) and there is a reasonable overlap of species in both countries (Cliquennois, 1999). We consider that Sylhet material agrees with specimens from Assam, hence new synonyms from India are *M. nimia* Brunner, 1907 and *M. subintegra* Carl, 1913. This takes into consideration variations in leg lobation highlighted in Brunner's key to species (and discussed by Carl), but confirmed by the rearing of a series of specimens to be merely variations.

Description of the males of *Medaura*

Head much longer than wide, with spines absent or a very short pair of spines or tubercules between eyes. Antennae length variable, but shorter than fore femora; first two segments elongated and considerably broadened. Thorax elongate, with (few to many) tubercles and / or granulations. Mesonotum about twice the length of the metanotum. Median segment about one quarter of the length of metanotum. Legs elongate, with slight dentations on femora and / or tibiae. Abdomen elongate, smooth to slightly granulated. Segments 8-9 widened. End of anal (10th) segment incised in centre.

Description of the females of *Medaura*

Head slightly longer than wide, with a pair of spines between eyes. Antennae short, less than half of the length of the fore femora; first two segments elongated and considerably broadened. Robust appearance, thorax smooth, slightly granulated or tuberculate. Mesonotum about twice length of metanotum. Median segment about one quarter of the length of the metanotum. Legs elongate, with minor dentation except for mid legs, which usually have a series of large thorn-like lobes on dorsal surface of femora (although sometimes completely absent in some specimens). Also with one or two shorter thorn-like lobes on mid tibiae. Abdomen robust, smooth to slightly granulated. End of anal segment incised in centre; shape variable. Operculum long, almost reaching end of anal segment.

Key to males of the genus *Medaura*

1. Elongate, thorax typically tuberculate. Mid femora with series of 3-4 small subapical spines. End of anal segment slightly incised in centre (or sometimes boldly incised but anal segment always tapered towards tip). . . . . *M. scabriuscula*
- More robust, thorax typically with sparse granulations. Mid femora with single small subapical spine. End of anal segment boldly incised in centre; segment slightly rounded, not sharply tapered. . . . . *M. jobrensis* **n.sp.**

Key to females of the genus *Medaura*

1. Robust, thorax with modest number of granulations or tubercules. End of anal segment split into two leaf-like lobes. . . . . *M. scabriuscula*
- More robust appearance, thorax with few to many granulations or tubercles. End of anal segment slightly triangularly incised in centre; but uneven. . *M. jobrensis* **n.sp.**

Note - whilst submitting the manuscript of this paper, it has been brought to our attention that Zompro (1998) has briefly noted a possible new *Medaura* species from the Nakhon Ratchasima region of Thailand.

Key to eggs of the genus *Medaura*

1. Capsule length 3mm, completely dotted with large pits. Micropylar plate heart shaped (fig. 8). . . . . *M. scabriuscula*
- Capsule length 2.5mm, dotted with pits, except within micropylar plate. Micropylar plate not quite heart shaped (fig. 16). . . . . *M. jobrensis* **n.sp.**

Medaura scabriuscula (Wood-Mason) (Figures 2-9)

Bacillus scabriusculus Wood-Mason, 1873: 55, pl. 7.1 (♀). Holotype ♀, India: Naga Hills, Assam, leg. Captain Butler (NZSI: believed lost).

Menaka scabriuscula; Wood-Mason, 1877: 342 [transferred to new genus].

Medaura scabriusculus; Kirby, 1904: 341 [catalogue of species].

Bacillus scabriusculus; Brunner, 1907: 241 [listed as possibly the same as *Medaura nimia* Brunner, 1907].

Stheneboea (Medaura) brunneri Stål, 1875: 69. Holotype ♀, India: Silhet, leg. Deyrolle (NHMW, 449) [examined].

Stheneboea brunneri; synonymised by Wood-Mason, 1877: 342. [listed as a synonym of *Menaka scabriuscula*].

Stheneboea (Medaura) brunneri; Kirby, 1904: 341 [listed as synonym of *Medaura scabriusculus*].

Medaura brunneri; Brunner, 1907: 241, pl. 11.2 (♀) [key to species].

Medaura nimia Brunner, 1907: 241. Holotype ♀, India: Calcutta?, leg. Thorey (NHMW, alcohol coll.) [examined]. **New synonym**

Note - locality considered doubtful by Brunner who added '?' after Calcutta. He also doubtfully linked his new species with Wood-Mason's *scabriusculus*.

Medaura subintegra Carl, 1913: 20. Holotype ♀, India: Khasi Hills, Assam (MHNG) [examined]. **New synonym**

Other material examined:

♂,♀ Bangladesh: Sharighat, Sylhet, 01.viii.1999, leg. N. Cliquennois (NHMW); ♂, ♀ same locality & collector, 31.vii-01.viii.1999 (NHMW); ♀ Sylhet Town, Sylhet, 27.vii.1999, leg N. Cliquennois (P.D. Brock); ♀ Silhet, no further details (OXUM).

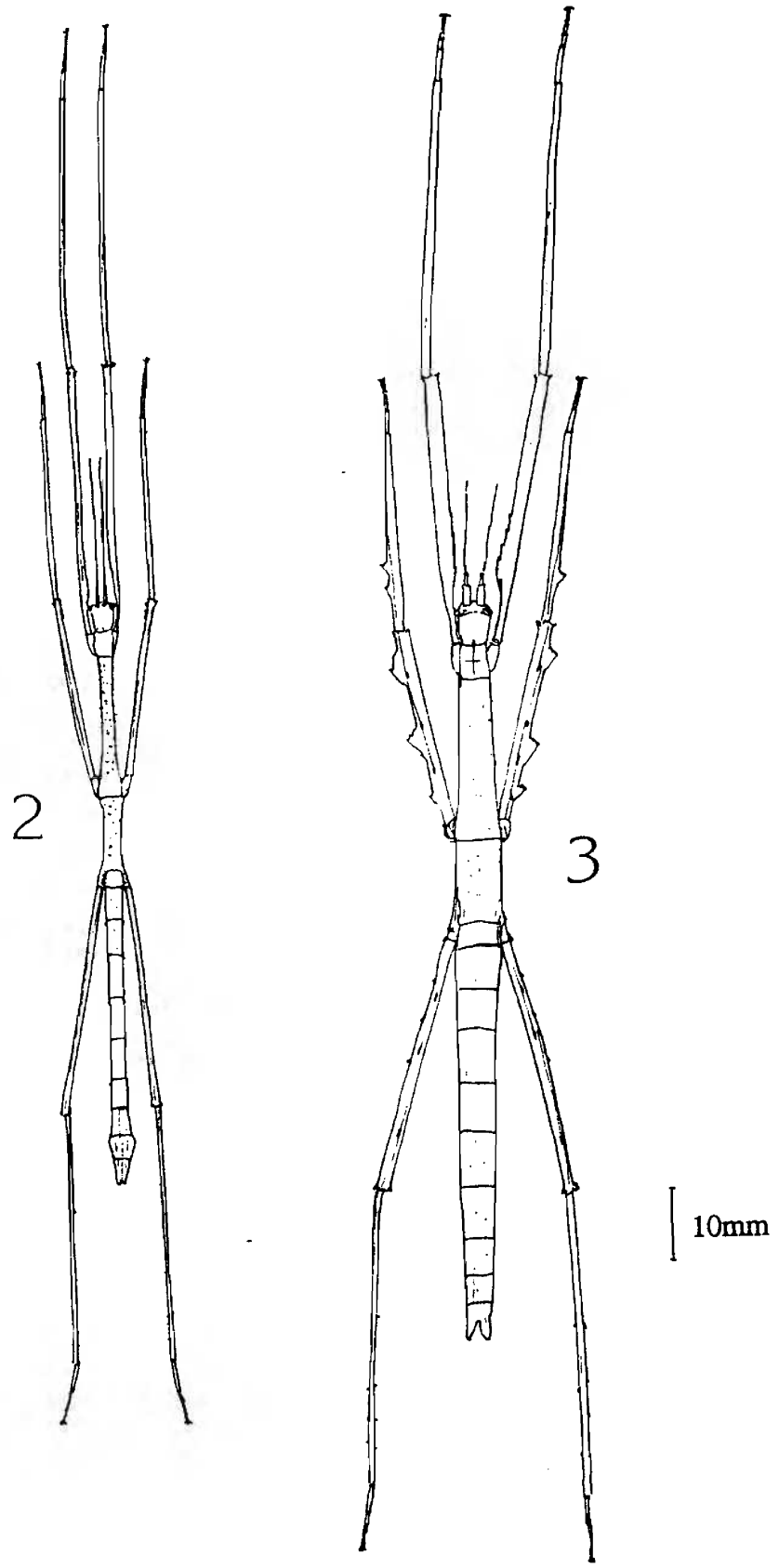
Description of male

Dark brown, thorax may be lighter.

Head one and a half times longer than wide, slightly elevated between eyes, otherwise smooth or sparsely granulated; posterior margin with central depression. Eyes small. Antennae shorter than fore femora, with 22 segments. First two segments considerably broadened, but elongate.

Pronotum slightly shorter than head with several bold tubercles and depressions (tubercles almost absent in some specimens). Tubercles mainly central but posterior margin with semicircular row of tubercles. Mesonotum six times length of pronotum, elongate with numerous darker tubercles. Metanotum just over half the length of the mesonotum, again with tubercles, but mainly on upper half. Median segment short, about one quarter of the length of the metanotum. Underside of thorax sparsely granulated.

Abdomen elongate, with sparse tubercles or granulations (sometimes almost absent). Segments 8-9 widened. Anal segment tapered towards tip, which is incised in centre. This varies from a slight to bold incision but the anal segment is always tapered towards tip. Subgenital plate rounded, reaching end of 9th segment; when viewed laterally there is a clear



Figures 2 & 3. *Medaura scabriuscula* (Wood-Mason), adults. **2.** Male; **3.** Female.

central protuberance. Cerci short, hidden beneath anal segment; tip rounded.

Legs elongate, slightly hairy; all with pair of apical spines. Mid and hind femora with subapical spines, 3-4 present on mid femora, 1-2 on hind femora. Femora and tibiae variable, but usually with very minor dentation.

Description of female

Variable shades of brown, thorax may have lighter areas with a dark raised median line; legs sometimes mottled.

Head thick, slightly longer than wide, armed between the eyes with two bold spines, projecting outwards and slightly backwards. Sparse tubercles and granulations present. Eyes small. Antennae short, less than half the length of the fore femora, with 18-19 segments; first two segments considerably broadened, but elongate; first segment particularly long (3mm).

Pronotum slightly shorter than head with central depression and coarsely granulated. Mesonotum and metanotum wrinkled longitudinally with small tubercles or granulations. Mesonotum more than four times length of pronotum, widening gradually posteriorly. Metanotum about half the length of the mesonotum. Median segment short but more than one quarter of the length of the metanotum. Underside of thorax sparsely granulated.

Abdomen with numerous small tubercles or granulations. Abdominal segments 8 and 9 slightly shorter in length; anal segment longer than 9th and tip boldly triangular incised in centre, giving it the appearance of having two leaf-like lobes. Operculum long, tapered towards tip, which is slightly pointed and reaches just beyond start of central incision. Cerci short, hidden beneath anal segment; tip rounded.

Legs elongate, slightly hairy; all femora with pair of apical spines. Upper half of fore femora slightly serrated. Mid femora with three large dentate foliaceous lobes dorsally and three small spines on the central carina, opposite to the foliaceous lobes. The hind femora have some small spines on each of the upper crests. Dorsally the mid tibiae have two smaller foliaceous lobes at the proximal end, and ventrally, a single spine at the proximal end; other minor spines feature on femora (including subapical spines) and tibiae. The femora and tibiae are variable, usually with very minor dentation, but in extreme cases this is absent (where legs have been regenerated this is normally the case, but such legs are usually shorter than normal length).

Description of egg

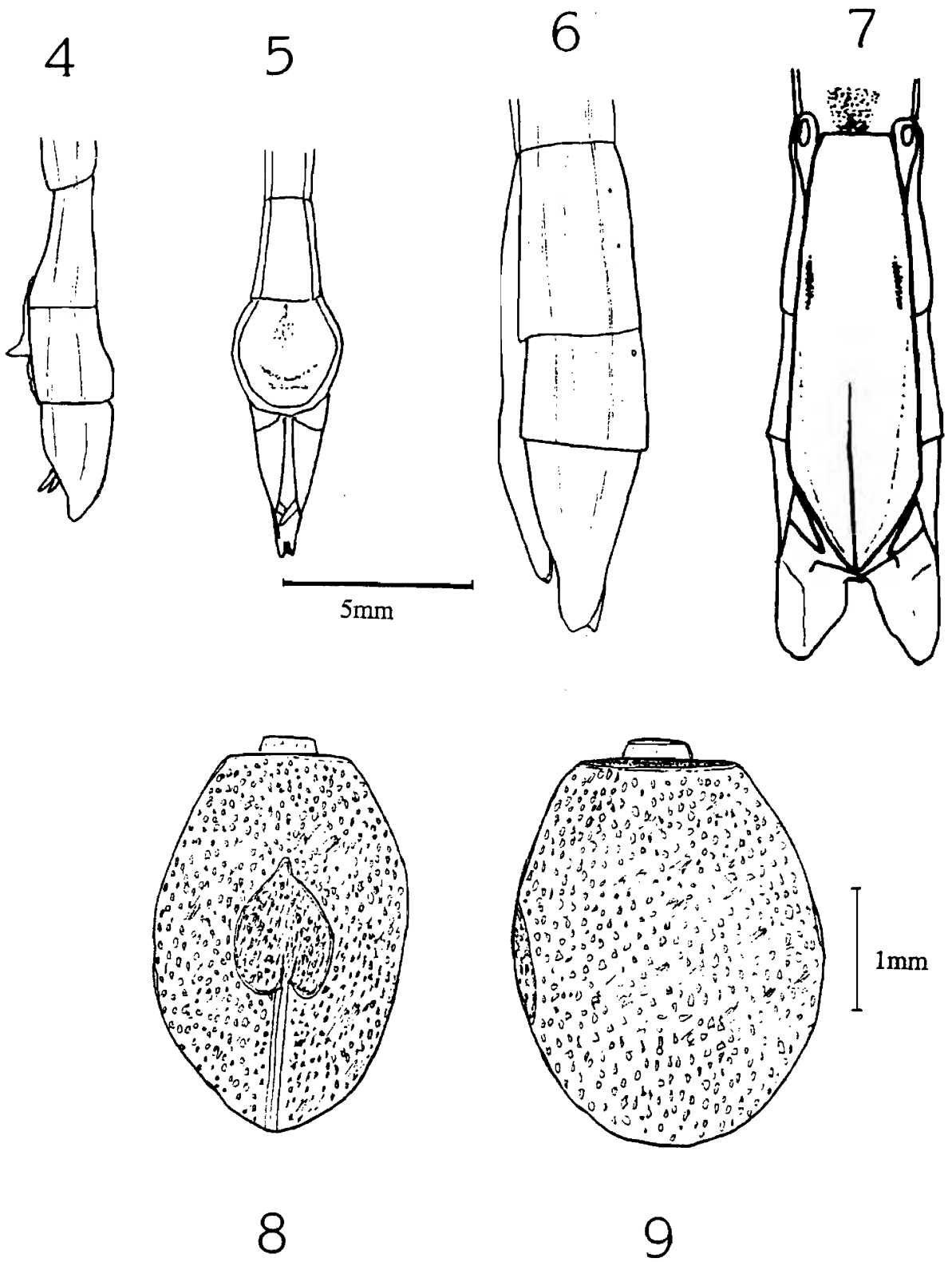
Various shades of brown, including some small darker patches. Capsule almost oval; completely dotted with numerous large darker brown pits. These pits are situated close together, including within the heart-shaped micropylar plate, which is the same colour as the capsule. Plate joined by a long median line. Capitulum dark yellowish-brown, with the top black. Operculum black, with brown inner ring. Measurements: length 3mm, width 2mm, height 2.5mm.

Distribution

Type locality: Naga Hills (Assam), India. Widely distributed in Assam region of India and possibly more widespread. Common in Sharighat, Sylhet, Bangladesh, and also found in Sylhet Town.

Notes

i) Foodplants. In the wild these include *Eupatorium odoratum* (Compositae), *Allophyllus cobbi* (Sapindacae), *Litsea monopetala* (Lauraceae) and various as yet unidentified



Figures 4-9. *Medaura scabriuscula*. **4-5.** End of male's abdomen, lateral & ventral; **6-7.** End of female's abdomen, lateral & ventral; **8-9.** Egg, dorsal & lateral.

plants. In captivity in Europe mainly fed on *Rubus fruticosus* (Rosaceae). In Bangladesh one male ate *Caesalpinia cucullata* (Caesalpiniacae).

ii) Colour variation. Males are various shades of brown. Females are usually much more variable, as follows: specimens seen include ones with white patches on the metanotum and / or anal segment. Examples with darker median lines are also occasionally observed. One had a broad orange-brown median band on the length of its body, also broad bluish blotches on the mesonotum and metanotum, with a tinge of blue on the abdominal segments; an unusual colour for a phasmid.

iii) This species is currently being reared within the Phasmid Study Group as culture 216.

Table 1. *M. scabriuscula*, adult measurements (mm).

	♂	♀		♂	♀
Body length	80-88	97-109	Fore femora	36	36-41
Antennae	4-4.5	5.5-6.5	Mid femora	25-27	25-30
Head	21-28	16-17	Hind femora	32	31-36
Pronotum	3-3.5	4.5-5	Fore tibiae	38-45	39-45
Mesonotum	18-20	21-24.5	Mid tibiae	25-30	25-30
Metanotum	10-11	10-12	Hind tibiae	35-45	39-44
Median segment	2-2.5	3-4	Cerci	0.8	1.2

Medaura jobrensis n.sp. (Figures 10-17)

Medaura brunneri?; Cliquennois, 1999: 52, figs 15-17. [not *brunneri* Stål, 1875].

Holotype ♂, Bangladesh: University of Chittagong, Jobra, Chittagong, ii-iii.1997, leg. N. Cliquennois (NHMW). Paratype series: ♀, same data (NHMW); ♂, ♀, same data except iii-iv.1997 (BMNH); ♀, same data, iii-iv.1997; ♂, 3♀♀, reared from Jobra, Chittagong region stock by P.D. Brock, iv.2000 (P.D. Brock). Note - in addition further reared specimens have been examined to ascertain the degree of variability within this species, but have not been preserved and therefore measurements have been excluded from those given below.

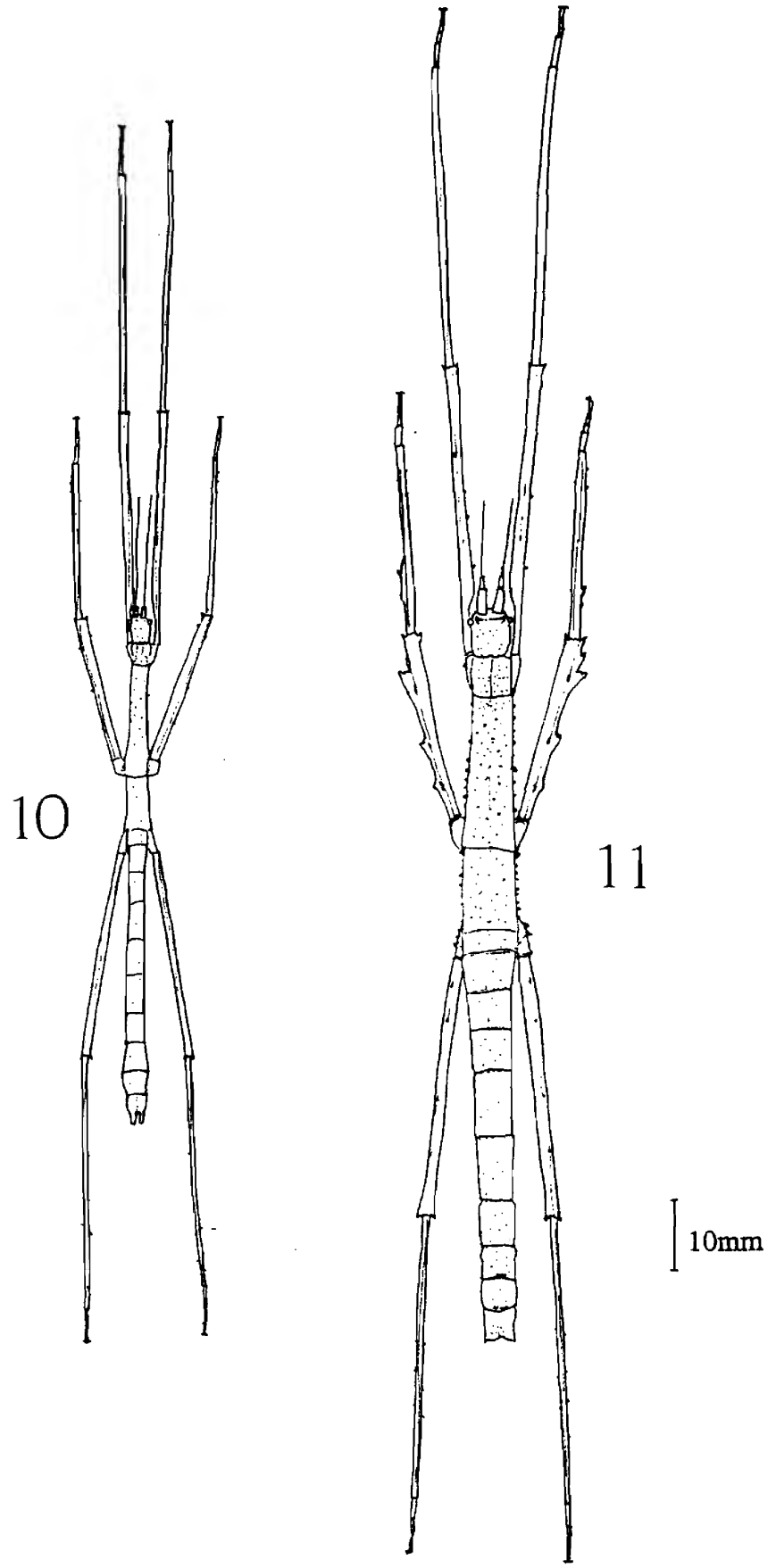
Description of male holotype

Dark brown, with lighter legs. Measurements given in Table 2.

Head one and a half times longer than wide, with pair of short tubercles between eyes, otherwise sparsely granulated; posterior margin with central depression. Eyes small. Antennae short, reaching just over half the length of the fore femora, with 23 segments. First two segments considerably broadened, but elongate; first segment larger.

Pronotum slightly shorter than head with several granulations and depressions. Mesonotum five times length of pronotum, elongate and sparsely granulated. Metanotum just over half the length of the mesonotum, slightly granulated. Median segment short, one quarter of the length of the metanotum. Underside of thorax sparsely granulated.

Abdomen elongate, sparsely granulated. Segments 8-9 widened. Anal segment slightly tapered towards the tip which is deeply incised in centre leaving two lobe-like structures with a large gap in between; each 'lobe' with several small dentations. End of subgenital plate



Figures 10 & 11. *Medaura jobrensis* **n.sp. 10.** Holotype male. **11.** Paratype female.

rounded, reaching end of 9th segment. When viewed laterally, plate is uneven, tapering sharply towards tip. Cerci short, hidden beneath anal segment; tips rounded.

Legs elongate, slightly hairy; all with a pair of short apical spines. Mid and hind femora with subapical spine. Femora and tibiae with minor dentations. Mid and hind femora with three small well spaced dentations on central carina, repeated on hind tibiae, which also have tiny subapical dentations. The proximal part of fore femora with slight dentations.

Paratype males

These show slight size variation, and variation in colour and dentation. Colour may be lighter brown, particularly on thorax and abdomen (and then usually with darker patches around hind part of metathorax and laterally along whole of thorax; also narrow red lines border a median longitudinal lighter coloured band, easier to distinguish on living specimens). The dentations can also be variable and the tubercles between the eyes can be hardly noticeable.

Description of female paratypes

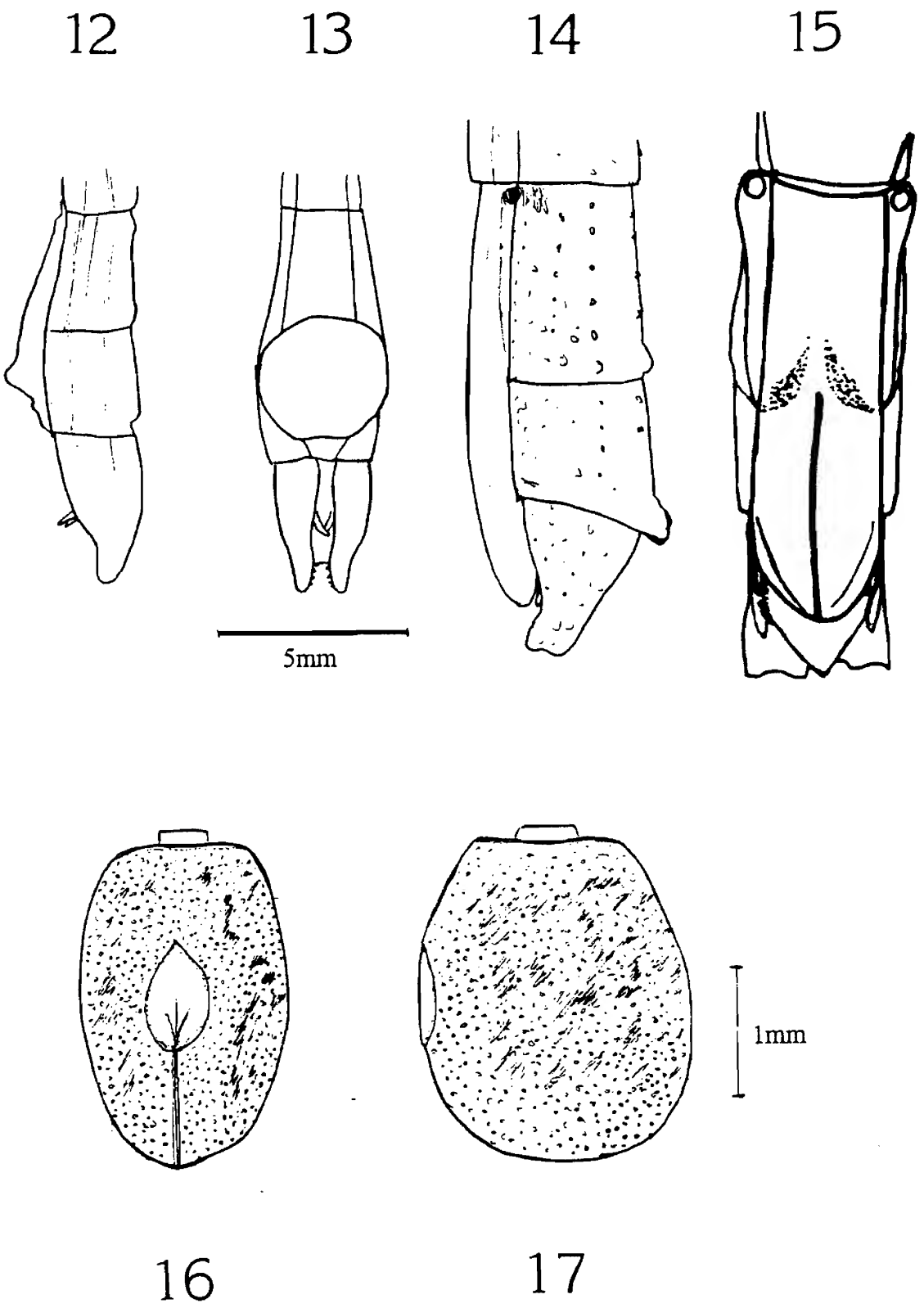
Variable shades of brown; legs sometimes mottled, with interrupted basal black band on mid and hind femora.

Head thick, slightly longer than wide, armed between the eyes with two bold spines on raised ridge, spines projecting outwards. Many tubercles and granulations present, but reared specimens often lack these. Back of head with median tubercles. Eyes small. Antennae short, less than half the length of the fore femora, with 21-22 segments. First two segments considerably broadened, but elongate; first segment particularly long (3mm); apical segments very shortened.

Pronotum slightly shorter than head with bold central cross-like depression and usually coarsely granulated (but not in some specimens). Deep median fissure on hind part of pronotum. Mesonotum and metanotum wrinkled longitudinally; ranging from having few tubercles to heavily tuberculate, particularly laterally. Mesonotum more than four times the length of the pronotum, widening gradually posteriorly. Metanotum about half the length of the mesonotum. Median segment short, slightly more than one quarter of the length of the metanotum. Underside of thorax smooth, or sparsely granulated in specimens which are heavily tuberculate dorsally.

Abdomen with small tubercles or granulations frequent (but almost absent in some specimens). Abdominal segments 8 and 9 slightly shorter in length; anal segment same length as 9th and tip slightly and unevenly triangularly incised in centre. Laterally, hind part of anal segment with small spine on each side, projecting backwards (also sometimes present on hind part of 8th segment). End of 9th segment with large twin tubercles in centre. When viewed laterally, the anal segment tapers sharply towards the tip. Operculum long, rounded at the tip which almost reaches end of anal segment. Cerci short, hidden beneath anal segment; tips of cerci rounded.

Legs elongate, slightly hairy; all femora with pair of apical spines. Fore femora slightly serrated up to middle of the upper crest. Mid femora with three large dentate foliaceous lobes dorsally and three small spines on the central carina (much reduced in some specimens). The hind femora have some small dorsal spines. The mid tibiae have two smaller foliaceous lobes at the proximal end and other minor spines. Slight dentation also on other femora (including 1-2 subapical spines) and tibiae; dentation variable, although usually with very minor dentation, in extreme cases this is absent.



Figures 12-17. *Medaura jobrensis* **n.sp. 12-13.** End of holotype male's abdomen, lateral & ventral; **14-15.** End of female abdomen, lateral & ventral; **16-17.** Egg, dorsal & lateral.

Description of egg
Various shades of brown, with darker brown patches, some joined together. Capsule almost oval; dotted with numerous darker brown pits. Micropylar plate centrally positioned; almost heart shaped; mid-brown, with darker outer rim. Plate joined by long median line. Capitulum of modest size, dark brown, with base and top black. Operculum black, with uneven and incomplete inner brown ring. Measurements: length 2.5mm, width 1.7mm, height 2.1mm.

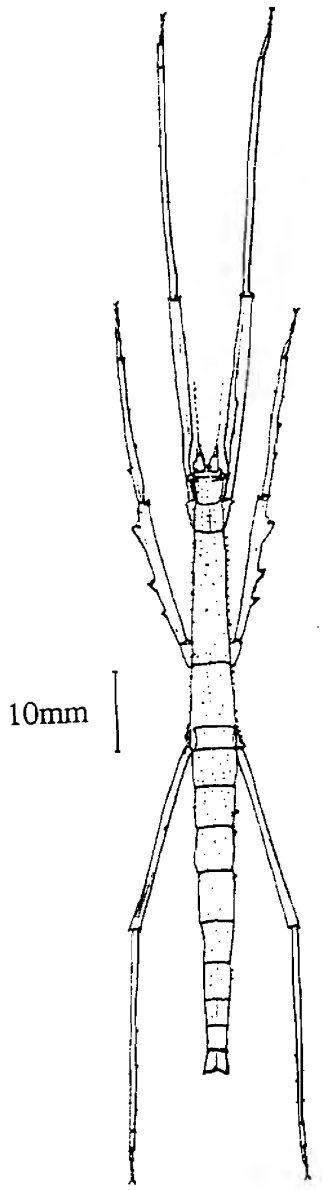
Table 2. Measurements of *Medaura jobrensis* **n.sp.** (mm)

Lengths (mm)	Holotype ♂	paratype ♂♂	paratype ♀♀
Body length	73	71	90-106 ($\bar{x}$ 99)
Head	3.8	3.5	6-7
Antennae	17	17-18	11.5-16
Pronotum	3.5	3	5-5.5
Mesonotum	16	15	18-22
Metanotum	8	9	9-11
Median segment	2	2	3-3.5
Fore femora	33	33-35	32-42
Mid femora	21	21-22	21-27
Hind femora	30	30	28-37
Fore tibiae	34	34-36	35-43
Mid tibiae	22	21-22	21-27
Hind tibiae	32	31-33	30-41
Cerci	0.8	0.8	1.2

Distribution
Collected in the daytime only from the type locality: University of Chittagong grounds, Jobra, Chittagong region, Bangladesh, so the status in the wild is unknown.

Etymology
Named after the type locality, Jobra.

Notes
i) Foodplants. In the wild foodplants include *Microcos paniculata* (Tiliaceae), *Streblus asper* (Moraceae) and *Litsea monopetala* (Lauraceae), amongst other as yet unidentified plants; this species is often found at rest on low growing vegetation. In captivity in Europe mainly fed on *Rubus fruticosus* (Rosaceae), widely used as a substitute foodplant for phasmids. However, they readily accept *Psidium guajava* (Myrtaceae), *Mangifera* sp. (Anacardiaceae), *Artocarpus heterophyllus* (Moraceae) and *Ficus religiosa*



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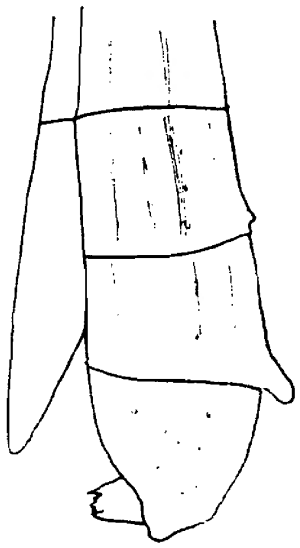

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Figures 18-20. *Medaura* sp. female from Lawachora, Sylhet. **18.** Dorsal view; **19.** End of abdomen, lateral view, **20.** ventral view.

(Moraceae).

ii) Behaviour. In defence, they appear to rely on remaining motionless, although nymphs sometimes curl their abdomens in a scorpion-like manner, even when at rest.

iii) Colour variation. Wild-caught material have more tubercles on the thorax and abdomen than the majority of reared specimens. Variably coloured nymphs and adults have been found or reared; females are particularly variable and larger nymphs have been found ranging from grey, brown, black, or combinations of these colours. Blotches often fit in well with their surroundings, hence dark insects with paler blotches.

iv) This species is currently being reared within the Phasmid Study Group as culture 202.

Other specimens

A smaller 77mm female (figures 18-20) of what may be a dwarf female form of *M. jobrensis* has been found at Lawachora, Sylhet region, 29.viii.1998, leg. N. Cliquennois (NHMW). Until other material is known and further eggs examined (there was damage to the eggs seen, which are similar to *jobrensis*), this specimen is left as doubtful and not part of the type series. Males (72mm) from Lawachora were observed, but not collected.

General discussion

Once again, variability in a phasmid species has confused authors, resulting in repeated descriptions. Variation is minimal in some phasmids, but extreme in others. However, in defence of early authors, this is not always straightforward to visualise, without the benefit of rearing a series of insects. There are, of course, many other problems with phasmid taxonomy, which are summarised in Brock (1998).

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